UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,893	02/17/2006	Ryuichi Shimada	B-5648PCT 622443-2	5882

7590 10/21/2008

Richard P. Berg
Ladas & Parry
5670 Wilshire Boulevard
Suite 2100
Los Angeles, CA 90036-5679

EXAMINER	
AMRANY, ADI	
ART UNIT	PAPER NUMBER
2836	

MAIL DATE	DELIVERY MODE
10/21/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,893	SHIMADA ET AL.	
	Examiner	Art Unit	
	ADI AMRANY	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/25/08; 9/4/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed September 15, 2008 have been fully considered but they are not persuasive.

Toyama discloses that the capacitor (17) is connected to a DC terminal of the bridge circuit. The section cited by applicants (col. 2, lines 63-67) also includes a rectifying diode. The capacitor and diode "rectify and smooth AC voltages."

Regarding the switching pattern of the semiconductor switches, claim 1 recites that a pair is controlled to turn on simultaneously or alternately. As admitted by applicants, Toyama discloses simultaneous switching. Further, one skilled in the art would be able to meet the switching configurations of claim 1 while meeting the recited limitation of "positioned diagonally." The physical locations of the switches have no bearing on their electrical configuration.

The rejection based on Yuzurihara has been withdrawn due to its filing date.

Regarding Moriguchi, although the title refers to a "DC power supply apparatus," figure 1 clearly shows DC power inverted (22) to supply an inductive load (52). It appears that at the right end of the load, diodes rectify the output power (node 54P), the load is interpreted as the transformer (52). Therefore, Moriguchi meets the recited limitations of claim 1.

The Moriguchi capacitor (16) is clearly connected to a DC terminal of the bridge circuit, as required by claim 1. It is noted that all capacitors charge and discharge. Inherent properties of capacitors allow the component to charge up to the voltage

supplied across its terminals and then discharge when that voltage is removed. Regardless, claim 1 only recites that the capacitor is “initially charged.”

Regarding the timing of the bridge circuit switching, Moriguchi figure 2 shows that the pairs (30,40 and 28,42) have times when at least one switch from both pairs are on. The language of claim 1 requires that when any one switch of one pair is on, both switches of the other pair are off. However, as discussed above, the physical location of the switches ("positioned diagonally”) has no bearing on their electrical functions. One skilled in the art would readily understand how to redraw the circuitry of figure 1, such that select switches are “diagonal” with respect to each other. Applicants have not responded to or rebutted this interpretation, which was also provided in the non-final rejection (May 28, 2008).

Information Disclosure Statement

2. The information disclosure statement filed September 4, 2008 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, applications, or other information submitted for consideration by the Office. The European Search Report is not listed as a reference on the IDS. The report, and the references cited therein, has been considered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Toyama (US 5,751,121).

With respect to claim 1, Toyama discloses a pulse power supply device (fig 1; col. 2, lines 26-33) using recovered magnetic energy for supplying a bipolar pulse current to an inductive load (2) with high repetition and for recovering residual magnet energy of a system so as to use it for a next discharge, comprising;

a bridge circuit (5) including first and second pairs of two inverse-conductive semiconductor switches (23a-d; col. 3, lines 15-21);

an energy source capacitor (17; col. 2, line 63 to col. 3, line 1) initially charged which is connected to a DC terminal of the bridge circuit (5); and

a control circuit (7, 24) for controlling the first and second pairs of switches positioned diagonally on the bridge circuit so that when two switches of the first pair are controlled to turn on simultaneously, the control unit controls the two switches in the second pair to be off, and so that when the two switches of the second pair are controlled to turn on simultaneously, the control circuit controls the switches in the first pair to be off (col. 3, lines 17-21).

The preamble of claim 1 is interpreted as an inherent result of operating the control circuit according to the limitations of claim 1. Support for this interpretation can be found in the language of the preamble: "for supplying a bipolar pulse current to an inductive load with high repetition and for recovering residual magnetic energy of a system so as to use it for next discharge." Further, claim 1 recites that the control circuit activates the switches to supply a bipolar pulse current to an inductive load. Since no

other components are recited, the regeneration of magnetic energy is interpreted as an inherent result of operating the control circuit according to claim 1.

As discussed above, claim 1 recites that the switches of a pair are controlled to turn on simultaneously or alternately. This is interpreted to mean that only one switch or both switches are controlled to turn on. Since Toyama discloses simultaneous switching (both on), the reference meets the alternative language ("or") of claim 1.

With respect to claim 2, Toyama discloses an AC power supply (4; col., 2 lines 34-62) is inserted in series with the load so as to replenish lost energy due to discharge so as to increase or decrease next discharge.

With respect to claims 3 and 5, Toyama discloses the switches are power MOSFETs (col. 3, lines 15-17).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriguchi (US 5,926,381).

With respect to claim 1, Moriguchi discloses a pulse power supply device (fig 1) using recovered magnetic energy for supplying a bipolar pulse current to an inductive load (52; col. 4, lines 25-38) with high repetition and for recovering residual magnetic energy of a system so as to use it for a next discharge, comprising;

a bridge circuit (22; col. 3, line 44 to col. 4, line 24) including first and second pairs of inverse conductive semiconductor switches (28, 30, 40, 42);

an energy source capacitor (16; col. 3, lines 13-19) initially charged which is connected to a DC terminal of the bridge circuit;

a control circuit (51) for controlling the first and second pairs of switches positioned diagonally on the bridge circuit so that when two switches of the first pair are controlled to turn on simultaneously, the control unit controls the two switches in the second pair to be off, and so that when the two switches of the second pair are controlled to turn on simultaneously, the control circuit controls the switches in the first pair to be off (fig 2a, lines (a) and (b); col. 4, line 51 to col. 5, line 26).

Moriguchi discloses the four switches are turned on/off so that only two switches (at least one of the pairs) are on at any one time (fig 2a). Further, it would be obvious to one skilled in the art to draw the schematic of figure 1, such that the switches are "positioned on diagonal lines," as the physical arrangement of the switches has no effect on their electrical switching.

With respect to claim 2, Moriguchi discloses an AC power supply (2a-c) is inserted in series with the inductive load so as to replenish lost energy due to discharge so as to increase or decrease next discharge current.

With respect to claims 3 and 5, Moriguchi discloses the switches are any kind of power MOSFET, inverse-conductive GTO thyristors, and units constituted so that

diodes and semiconductor switches such as IGBT (col. 3, lines 49-50 and 62-63) and the like are connected in parallel.

With respect to claims 4 and 6-7, Moriguchi discloses one of the two pairs of switches is replaced by diodes (32, 36, 44, 46). The diodes are connected in inverse-parallel with the switches, such that when a pair of switches is off, the switches are electrically "replaced" by the diodes.

7. Claims 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toyama.

It would be obvious to one skilled in the art that a transistor, including a MOSFET, can be replaced by an equivalent circuit that includes a diode.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADI AMRANY whose telephone number is (571)272-0415. The examiner can normally be reached on Mon-Thurs, from 10am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

/Stephen W Jackson/
Primary Examiner, Art Unit 2836